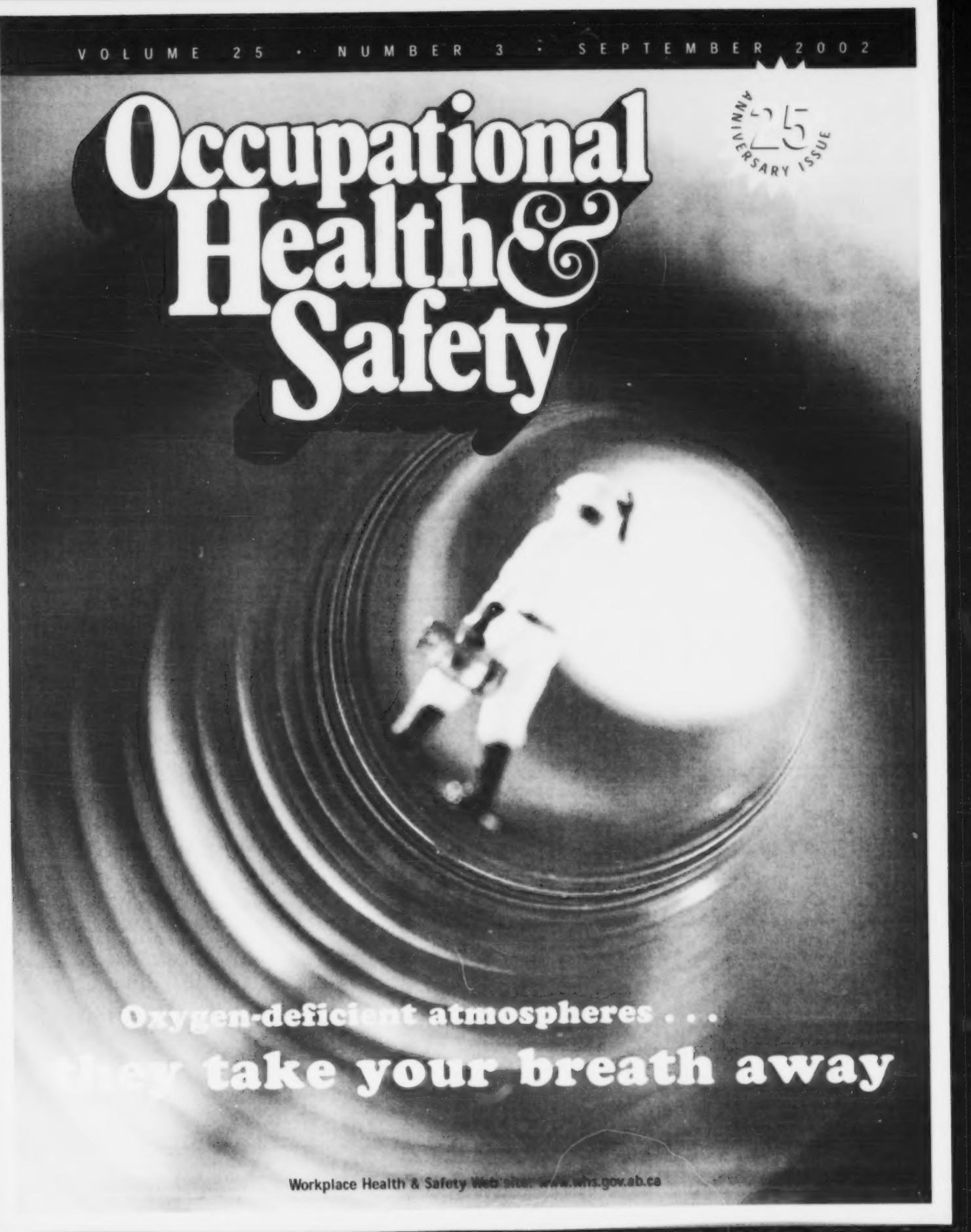
VOLUME 25 · NUMBER 3 · SEPTEMBER 2002

Occupational Health & Safety

25 ANNIVERSARY ISSUE



Oxygen-deficient atmospheres . . .

. . . take your breath away

Workplace Health & Safety Web site: www.whs.gov.ab.ca

I was there!

by Dr. Herb Buchwald

OH&S 25 years ago

Over the years, the Alberta government's role in occupational health and safety has developed hand in hand with the province's growing industrial base.

During the late 1960s and early 1970s, with increasing nationwide concern about environmental and occupational health and safety issues, responsibilities for oh&s were fragmented under several departmental programs. There was no legislated direction, little coordination and no identification of priorities. Recognizing this, in 1974 the Alberta government established the Gale Commission on Industrial Health and Safety to make recommendations on priorities and future directions for reducing the escalating number of workplace illnesses, injuries and deaths.

Based on this commission's recommendations, in April 1976 a consolidated Occupational Health and Safety Division was formed in the Department of Labour, to be supported by the new *Occupational Health and Safety Act* and regulations that became law in December of the same year. The commission focused attention on the following priority areas:

- the worker and the work site
- education
- occupational health services
- research and development
- the inspectorate (government work site inspectors)
- the role of management and unions

Has anything changed?

Now, 26 years later, Alberta's workplaces are again subject to an escalating number of injuries and deaths that have reached unacceptable proportions. Is history repeating itself or can there be some other reason for this trend? In my opinion, both old and new factors are at work.

The priorities of 1976 are still valid, and there is much to be learned from reviewing them in the light of present-day workplace organization and practices. Admittedly, the labour force and the number of workplaces have increased significantly. Many workers are holding down more than one job. The number of part-time and contract workers has also increased, while the number receiving some form of labour union protection has been markedly reduced.

Research is desperately needed to identify the kind of work and the nature of the workplaces that give rise to the greatest risks of injury and death. Death should not necessarily be the major determinant of priority for preventive action. Deaths represent only the visible tip of an iceberg whose base of debilitating injury, human costs and other losses largely remains unseen by the general public. Research needs to be extended to determine which preventive initiatives are likely to be successful in different working environments. Age, gender, education, training and experience of workers are factors that need to be considered.

The circumstances surrounding the cause and prevention of industrial accidents have many similarities to motor vehicle accidents. Education, operator experience, equipment design and maintenance, weather, visibility, individual habits and attention factors, as well as knowledge of the rules and regulations (law) and enforcement of law, are some of the variables that play a part in the genesis of an accident. Drivers (or workers) have confidence and belief in their own infallibility and ability to avoid accidents. How wrong they are!

Compliance works with education

There is no doubt that a police presence ensures compliance with the law in most cases. The appointment of a Crown prosecutor to facilitate all prosecutions under the *Occupational Health and Safety Act* is a major step forward, as are the greatly increased penalties for violation of the *Act* and regulations. However, these are after-the-fact measures generally applied to fatal and other very serious accidents or habitual violators of the law. What needs to be done to prevent non-compliance with the law when workers are not aware of what the law says? Often workers are too intimidated by their employers and co-workers to find out what their rights and responsibilities are under the law.

Before 1980 there were between eight and 12 deaths annually resulting from the cave-in or collapse of unsafe trenches and excavations. In 1981 a vigorous campaign was instituted to eliminate these needless deaths. The campaign consisted of education and extensive public information, followed by regular inspection of construction sites and known excavation projects. Stop-work orders were issued and followed up at all projects not in compliance with the law. Prosecutions were initiated against employers and workers where there was clear evidence of persons working in an unsafe trench or excavation. The campaign paid off: the number of deaths was reduced each year until there were none by 1985.

The problem, of course, is the constant changing of workplaces, employers and workers, so that the cautionary lessons and preventive measures may not be passed on from one generation to the next. A constant renewal of effort is needed. As the epilogue to the Gale Commission reported: "We found in Alberta a regrettable apathy towards the subject [occupational health and safety] . . . . Overcoming this apathy exhibited by worker and employer alike, is no doubt one of the greatest problems facing us in the area of occupational safety and health. Education, closely linked with enforcement of well-rounded regulations, is only a start. Exposure to knowledge is of little use if willingness to learn is lacking, and it has been shown time and again that enforcement of good regulations is disregarded when the policeman is not evident."

Much has been achieved during the past 25 years, but much more remains to be done for success to be maintained.

Dr. Herb Buchwald was assistant deputy minister of the Occupational Health and Safety Division at the Department of Labour in 1976. From 1979 until he retired in 1988 he was managing director of the division through several departmental moves. For the last eight years he has been a commissioner with the Appeals Commission for Alberta Workers' Compensation.

OCCUPATIONAL
Health & Safety
MAGAZINE

An Alberta Human Resources and Employment publication

Managing Editor – *Wally Baer*
Editor – *Juliet Kershaw*

Occupational Health & Safety Magazine is published three times a year, in January, May and September. Magazine policy is guided by the *Occupational Health & Safety Magazine* Advisory Board consisting of industry and government representatives.

Membership on the *Occupational Health & Safety Magazine* Advisory Board is open to any resident of Alberta with knowledge and experience in the field of health and safety, and an interest in communicating health and safety information to the public. Any individual interested in joining the Board should submit a letter of application to the managing editor of the magazine (See below: How to contact us). The Board meets three times a year in Edmonton. Board members do not receive remuneration or reimbursement for expenses related to meetings.

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Subscriptions to *Occupational Health & Safety Magazine* are available without charge by calling **(780) 415-9948**. When notifying us of a change of address, send an address label or subscription number with the new address.

Letters to the editor We welcome response to articles or information published in this magazine, as well as suggestions for future articles. We will print letters to the editor as space permits. The editor reserves the right to edit letters.

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How to get more occupational health and safety information

Look up the Workplace Health and Safety Web site at **www.whs.gov.ab.ca**
Contact the Workplace Health and Safety Call Centre at **1-866-415-8690**

Design and layout by McRobbie Design Group Inc.
Printing by Quebecor World Edmonton
Publication Mail Agreement No. 1528572
ISSN 0705-6052 © 2002

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25 Occupational Health & Safety Magazine!

"Since 1977, much has changed in the workplace, but the one thing that has not is the need for communication about occupational health and safety."

Alberta Human Resources and Employment Minister, Clint Dunford

was an important year for occupational health and safety in Alberta. The Alberta government, responding to the 1975 Gale Report, established a division devoted solely to occupational health and safety, and brought into legislation the first *Occupational Health and Safety Act*.

Following closely on the heels of these events, in early 1977 the first issue of *Occupational Health & Safety Magazine* was published.

Dr. Herb Buchwald was assistant deputy minister of the new Occupational Health and Safety (OHS) Division, and responsible for the introduction of the new publication. "One important recommendation of the Gale Report was the need for education and communication, particularly of workers and places of work," says Buchwald of the decision to establish a regular publication for all workplaces, libraries, government departments and unions in the province.

The OHS division included an education branch responsible for producing the new publication, including its editorial content and design. Under editor Jim Haughton's direction, branch staff chose and wrote the content featuring oh&s programs, regulations and incident information. "We took a look at statistical information and problem areas where there were most injuries, such as falls from heights or cave-ins of trenches," explains Buchwald, 25 years later.

Joe Miller assumed Haughton's responsibilities in 1986. He remembers that in the mid-1980s "there was a desire to expand the scope of the magazine beyond the employer" to make it more relevant to front-line oh&s professionals and workers.

Thus in 1986 the second generation of the publication emerged, transformed from a 12-page newsletter format into a 24-page magazine with a full-colour cover.

Miller thoroughly enjoyed his 10 years as the magazine's editor and then managing editor. "It was a fun and generally rewarding thing to do, which brought a positive and thankful response from readers." He recalls an employer once telling him that the magazine had prevented a serious injury when a worker remembered something he'd learned from the magazine.

The magazine's present management structure was implemented in 1997 under Charlotte Moran, who followed Miller. She instituted an advisory board of representatives from industry, labour and government to guide the choice of content for the magazine. "To me," comments Miller, "one of the great advances was putting in place an advisory board. For many years editorial had developed internally, but the board helped the magazine develop a focus that was appropriate."

Over the last decade, there have been dramatic changes not only in the workplace but in the oh&s industry itself. As Miller points out, "Most oh&s professionals worked in government when I first got involved; now I expect there are ten times as many in the private sector. It's become a real profession." Today, content in *Occupational Health & Safety Magazine* reflects the needs of the oh&s professional, the industrial and office worker, and the employer.

Wally Baer is the current managing editor of the magazine and director of Workplace Health and Safety. For Baer, one of the biggest changes in oh&s since the early days of the magazine is that "occupational health and safety has become a broad societal issue."

Baer is confident that as trends change, *Occupational Health & Safety Magazine* will continue to keep Albertans informed. "While there's more recognition that attitudes and behaviours practised at home, on the highway and at play follow us into the workplace," he says of today's challenge, "we can expect to see the magazine reflect this, as it continues its tradition established over the past 25 years of helping people to stay safe and healthy."

The Big One
First Annual Health & Safety Conference of Alberta
November 19 – 21, 2002, Edmonton Inn, Edmonton

The Health & Safety Conference Society of Alberta, a non-profit association of health and safety associations, employer associations and other partners, is sponsoring the first annual Health & Safety Conference of Alberta. The conference offers high-impact learning for practitioners, managers and consultants. It features a wide range of exhibitors and session topics, and high-profile keynote speakers.

Two days of presentations and a trade show of more than 50 exhibitors will be followed by a day reserved for formal training sessions.

For more information, contact Dianne Paulson, (780) 453-3311 or 1-800-661-2272.

OHS Regulation — update

Legal drafting of the new occupational health and safety regulation continues, with completion anticipated for this fall. The targeted approval date of the new regulation has been delayed until the end of the year.

Completion of the three-year review of provincial occupational health and safety regulations is a key initiative at Workplace Health and Safety. Regular review of the regulations ensures that the most appropriate technical and scientific standards are incorporated into the workplace safety rules prescribed in the regulations. The review of each regulation is conducted through public consultation by a task force comprised of employer, worker and government representatives.

Bonus offer with workplace violence video

The $15 video, "Concerned About Workplace Violence?", produced by Workers' Compensation Board – Alberta (WCB), comes with a bonus offer: a 30-minute presentation by a WCB representative to help you develop a customized violence prevention program at your workplace. In the Edmonton and Calgary regions the presentation is offered at no cost; elsewhere, the cost will be confined to covering presenters' expenses.

Call (780) 498-4822 for more information.

Canada's Healthy Workplace Week!
October 21 - 27, 2002

Canada's Healthy Workplace Week has been designated to increase awareness of the importance of healthy workplaces and to encourage Canadian organizations, large and small, to participate in comprehensive workplace health promotion, prevention and wellness strategies.

A comprehensive approach to workplace health includes conducting a thorough needs assessment, and developing an organizational health plan and effective evaluation strategies. When used within any organization, the comprehensive workplace health approach optimizes organizational productivity and employee well-being.

To find guidelines for implementing a comprehensive workplace health in an organization, see **www.nqi.ca/english/index.html**.

2002 Municipal Safety/Utility Workshop and Trade Show
November 26 – 28, 2002
Red Deer Lodge, Red Deer, Alberta

Workshop topics include a look at the soon-to-be-released *General Safety Regulation* amendments, tools to apply the working alone legislation and options for locating underground utilities.

For more information, contact Al Coker at (403) 347-0324 or adcoker@shaw.ca.

It's Just Different

Precision Drilling, a rapidly expanding international oilfield services company based in Calgary, employs over 10,000 people and consequently manages a huge amount of safety data. In the drilling division alone, 32,000 safety meetings are held each year and approximately 16,000 hazard observations are received from the field. An administrator at each operating centre collects information from the 223 sites located in Western Canada. Precision Drilling has developed its own in-house software to handle data-tracking activities and produce the information needed to manage all aspects of its safety program.

In St. Isidore, François Allard, co-owner of Allard Logging, takes on most of the responsibility for promoting health and safety to his two or three seasonal employees. The company hired a consultant to develop a policy and procedures manual, and it pays for workers' safety training. The rest, however, is up to François and his partner and brother, Pierre Allard. They personally maintain the machinery, ensure that workers maintain a safe environment, complete the forms and checklists, and keep the safety manual current. The Allards also keep the books, market the company's services and handle the many other tasks that most small business owners must somehow fit into their schedules.

So which of these companies faces a greater challenge? Is it more difficult to ensure that a staff of thousands is working safely within a complex company structure that has many levels of management? Or to have direct personal contact with employees but also be expected to meet standards that – some say – are designed with large companies in mind and may not fully recognize the unique needs of a small operation?

When *Occupational Health & Safety Magazine* posed these questions to variously sized Alberta employers, the responses were both thoughtful and reassuring.

Large and in charge

At Precision Drilling, because oilfield drilling is seasonal, staff turnover is high. Therefore, the company constantly has to deliver safety training programs to new supervisors and new workers. "We have to offer continuous training to meet the demand," says Steve James, vice president, health, safety and environment for the company's contract drilling group, who leads a staff of nine safety professionals.

As well, numerous amalgamations with smaller companies have presented the challenge of "bringing together different cultures," as James describes it. The key

by Anita Jenkins

The size of your business doesn't count when it comes to managing health & safety

method of ensuring company-wide consistency and continuous improvement, James says, is to stay focused. This is done by scheduling regular safety meetings and field visits (over 1,000 visits in the year 2001 by operations and safety staff).

"It takes time to change things," James observes when asked about the pros and cons of managing health and safety in a large operation. "But the positive thing about working for a large company is the opportunities you have to provide leadership to the whole industry."

High staff turnover is often a factor in large companies' health and safety planning, particularly now that Alberta's economy is thriving and job opportunities abound. In high-risk industries, such as those that involve the use of powerful machinery, inherent risk is complicated by staff turnover and by the employment of numbers of people who come from countries where injury or even death on the job is considered normal. Keeping workers safe demands creative and innovative methods of introducing workers to safe work practices. One company has, for example, introduced a risk assessment database, behaviour-based safety processes and a safety IQ program.

"It's not harder or easier to offer an occupational health and safety program in a large or small business. It's just different."

Small is beautiful, sometimes

"A little bit of structure goes a long way," says Wally Baer, director of Workplace Health and Safety. He's talking about how important it is for small companies to have health and safety programs, even when resources (money and time) are minimal. "An oh&s program doesn't have to be onerous," Baer says.

Others with more direct experience in small business sometimes mention the red-tape barriers that provincial safety regulations can create. Interestingly, though, most of the people we spoke with tended to agree with Baer's observations. Dan Kelly, vice president, Prairie region, of the Canadian Federation of Independent Business, even sees certain advantages in being a small operation. "The people at the top often work alongside their employees so they know the risks," Kelly comments. "Being able to observe the situation first-hand is a real benefit."

Kelly has observed that there is a "growing understanding on the part of government that businesses of different sizes operate differently." He says this type of recognition is becoming increasingly important since almost three quarters of Alberta's businesses employ fewer than five people and 95 percent have fewer than 50 employees. In 1998, small businesses (fewer than 50 employees) accounted for 37 per cent of total employment in the province.

One step the government has taken recently is to revamp the standards for the Partnerships Small Employer Certificate of Recognition Program. SECORP, which enables small employers to meet industry standards (increasingly a requirement for subcontractors) through partnerships with safety associations, industry groups and other agencies, now permits small companies with ten or fewer employees to opt for self-assessment in the certifying process. This project is going well, says Rob Feagan, the Partnerships manager at Workplace Health and Safety. Feagan has observed that people often make their first contact with SECORP because they want to bid on a project that requires a Certificate of Recognition (COR). But then a year or so later he hears them saying, "Hey, wait a minute. This really means something."

Still, some find it hard to meet safety standards required for a COR. Kent Strandquist, owner of Kent's Contracting, appreciates the value of safety, having lost a brother in the logging industry some years back. Even so, he says, his small company in Hillcrest that employs five or six people could not have done what is required for certification if he had been just starting out. "It's a lot of work to document everything," Strandquist says, "and it cost close to $2,000." Furthermore, Strandquist does not believe that he is operating any more safely than before. "Nobody has been injured in my company in years," he says. "We are all friends, and we are all experienced."

Dan Campeau, project manager and safety officer at Petro-Chem Fabricators, Edmonton, admits that his views may be coloured by his past experience with a larger company and the fact that his company's size (between 13 and 16 employees) makes safety planning somewhat more manageable. Nonetheless, Campeau says, even very small operations have to set a goal. "You are still a business person. You set your budget for the year, and setting up a safety plan is really no different. Striving for quality and productivity and safety are all part of being a successful business."

Bill Santrock, owner of Totem Welding in Edmonton, would like to see the audit process simplified, and he has heard that this could happen. Nonetheless, no matter what is required, "We'll continue to do it," he says. As he puts it, if one of his employees (currently between seven and 10 people) had a serious accident and he was not meeting the safety standards, "I could be hung out to dry." Allard echoes Santrock's comments, on a different level. "What would my family do without me?" he asks.

Overall, the interviewees said, a life is a life and a limb is a limb, regardless of where you work. Safety is an integral part of any type of business. Perhaps Lloyd Harman, director of health, safety and loss management, Alberta Forest Products Association, says it best. "It's not harder or easier to offer an occupational health and safety program in a large or small business," Harman states. "It's just different."

Anita Jenkins is a freelance writer and editor living in Edmonton.

Oxygen-deficient at

They take your breath away

by Bill Corbett

Hydrogen sulphide, carbon monoxide and other toxic gases get most of the publicity. But the mere absence of a benign substance that's all around us can be just as hazardous.

An oxygen-deficient atmosphere can injure or even kill workers, often with no obvious warning signs to the unaware. The good news is that by following a few simple safety procedures, workers can safely handle any number of oxygen-deficient situations.

It's the number one toxic hazard

"Everybody talks about toxic hazards like hydrogen sulphide, particularly in Alberta's oil and gas industry. But worldwide, oxygen deficiency is probably the number one hazard," says Greg Rude, national sales manager with Calgary-based BW Technologies Ltd., a leading manufacturer of industrial gas monitors.

The reason is, there are many ways oxygen can be displaced or diluted, especially in confined spaces. And it doesn't take much of an oxygen deficit for serious problems to occur.

The normal oxygen content in air is 20.9 per cent, halfway between the generally accepted workplace standard of 19.5 to 23 per cent by volume, under normal atmospheric pressure. An oxygen-deficient atmosphere occurs when oxygen levels fall below 19.5 per cent, at which point the air does not contain sufficient oxygen to support metabolism for an unlimited period of time.

At 17 per cent oxygen by volume, the symptoms might simply be faster and deeper breathing. But by 15 per cent, they can quickly progress to dizziness and rapid heartbeat. Levels below 13 per cent can lead to unconsciousness and, around six per cent, to death. These are rough guidelines for the average healthy person at rest. They can vary according to individual health (for example, whether one smokes), level of physical exertion and altitude.

The problem is, unless one has a gas detector that monitors oxygen levels, there are no warning signs, such as odour or colour, that anything is wrong. Often victims are too dazed or weak to help themselves or even summon help. The situation can escalate tragically if a worker loses consciousness upon entering an oxygen-deficient space and then has several unwitting co-workers come to investigate or attempt a rescue.

Causes of oxygen-deficient atmospheres

Oxygen-deficient atmospheres typically occur in confined, unventilated spaces, where an inert gas such as nitrogen or argon has displaced the oxygen. Usually this displacement is unintentional, such as a leak or spill from a compressor, cylinder or other piece of equipment. Several years ago, an Alberta worker died after entering a trench where liquid nitrogen apparently escaped from a freeze-plug jacket used to test a piece of exposed pipeline.

Often, it doesn't take much of a leak to create a hazard. One litre of liquid nitrogen expands to nearly 700 litres of nitrogen gas when warmed to room temperature. Liquid neon expands to 1,445 times its original volume when vaporized. "Even a small leak from a tank has the potential to displace all the breathable oxygen if the space is not well ventilated," says Ray Cislo.

The problem is there are no warning signs, such as odour or colour, that anything is wrong.

Signs and symptoms of oxygen-deficient exposure (% oxygen by volume)

15-19% Decreased ability to perform tasks or work strenuously. May impair coordination and may induce symptoms in those with coronary, pulmonary or circulatory problems.

12-15% Deeper breathing (especially under exertion), increased pulse rate and impaired coordination, perception and judgment.

10-12% Further increase in pulse rate and rate and depth of breathing, further impaired coordination and judgment. Lips slightly blue.

8-10% Mental failure, nausea, vomiting, ashen face, fainting, unconsciousness, blue lips.

6-8% May be fatal in 50-100% of cases when exposed for 8 minutes; 25-50% fatal after 6 minutes; and recovery likely, with treatment, after 4-5 minutes.

4-6% Coma in 40 seconds, followed by convulsions, breathing failure and death.

safety engineering specialist with Workplace Health and Safety. "If the concentration of oxygen in such a space is below 12 per cent, you have virtually no chance if you enter it unprotected."

Gases that are heavier than air or very cold tend to collect at or near floor level or in low spots such as trenches, ditches or manholes. Escaped methane in an underground coal mine, however, is lighter than air and can displace oxygen near the roof of a mine shaft. In either case, these areas may contain little or no oxygen, while surrounding areas have sufficient oxygen.

Sometimes oxygen is displaced intentionally by an inert gas. A welder, for example, might u... a nitrogen flush to purge an old gasoline storage tank of oxygen to prevent a spark causing a fire or explosion (oxygen is needed to support combustion). Such a worker would obviously use a self-contained breathing apparatus or have a supplied line of breathing air when operating in this oxygen-depleted atmosphere.

Oxygen levels can also become deficient by means other than inert gases. Bacteria, for instance, use up oxygen when feeding on organic matter like oil sludge in an old tank, mouldy straw in a storage bin or waste in a sewer line. Two Alberta children died after entering a root cellar where rotting vegetables had consumed most of the oxygen. A rusting grain hopper, boiler, pipeline or storage tank also consumes oxygen over time and can pose a risk if not ventilated. Of course, fire also consumes oxygen.

If the volume of oxygen in a space is below 12 per cent, you have virtually no chance if you enter it unprotected.

Beware the danger of ignorance

Companies that routinely work in confined spaces are generally well informed about the risks of oxygen-deficient atmospheres and take the necessary precautions to avoid potential hazards. "A possible exception is the worker who has tested a confined space a hundred times and never seen a deficiency and then doesn't bother to test it the hundred-and-first time," says Mark Rice, a hygienist with Workplace Health and Safety.

"Generally speaking, people who frequently work in confined spaces have the equipment and training to protect themselves," adds Cislo. "Those who do it infrequently or don't understand there's a potential hazard might be playing a bit of Russian roulette." He recalls one person who enquired if it was all right to store and carry nitrogen cylinders in a panel van that served as a portable workshop. A similar example is that of a worker who stored dry ice in a walk-in refrigerator, unaware that the released carbon dioxide was displacing oxygen in a climate-controlled unit that had little outside air exchange.

Eliminating the hazard

The first defence against an oxygen-deficient atmosphere is to remov the hazard, such as a nitrogen cylinder, from a confined space. When using inert gas systems, always provide adequate air movement and ventilation, such as an air exchange system or exhaust or floor fans. Workers should never enter, or work in, a suspected oxygen-deficient area without a source of supplied air — either a self-contained breathing apparatus or a supplied-air breathing apparatus, complete with an emergency bottle of air hooked to a waist belt.

The only way to detect an oxygen-deficient atmosphere is with monitoring, preferably with a device that monitors the ...ygen continuously. BW Technologies, for example, makes a number of portable and fixed multi-gas monitors, which provide ongoing readings of oxygen levels and instantly trigger audible and visual alarms when levels fall below safe limits.

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Oxygen-deficient atmo

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spheres

safety engineering specialist with Workplace Health and Safety. "If the concentration of oxygen in such a space is below 12 per cent, you have virtually no chance if you enter it unprotected."

Gases that are heavier than air or very cold tend to collect at or near floor level or in low spots such as trenches, ditches or manholes. Escaped methane in an underground coal mine, however, is lighter than air and can displace oxygen near the roof of a mine shaft. In either case, these areas may contain little or no oxygen while surrounding areas have sufficient oxygen.

Sometimes oxygen is displaced intentionally by an inert gas. A welder, for example, might use a nitrogen flush to purge an old gasoline storage tank of oxygen to prevent a spark causing a fire or explosion (oxygen is needed to support combustion). Such a worker would obviously use a self-contained breathing apparatus or have a supplied line of breathing air when operating in this oxygen-depleted atmosphere.

Oxygen levels can also become deficient by means other than inert gases. Bacteria, for instance, use up oxygen when feeding on organic matter like oil sludge in an old tank, mouldy straw in a storage bin or waste in a sewer line. Two Alberta children died after entering a root cellar where rotting vegetables had consumed most of the oxygen. A rusting grain hopper, boiler, pipeline or storage tank also consumes oxygen over time and can pose a risk if not ventilated. Of course, fire also consumes oxygen.

Beware the danger of ignorance

Companies that routinely work in confined spaces are generally well informed about the risks of oxygen-deficient atmospheres and take the necessary precautions to avoid potential hazards. "A possible exception is the worker who has tested a confined space a hundred times and never seen a deficiency and then doesn't bother to test it the hundred-and-first time," says Mark Rice, a hygienist with Workplace Health and Safety.

If the volume of oxygen in a space is below 12 per cent, you have virtually no chance if you enter it unprotected.

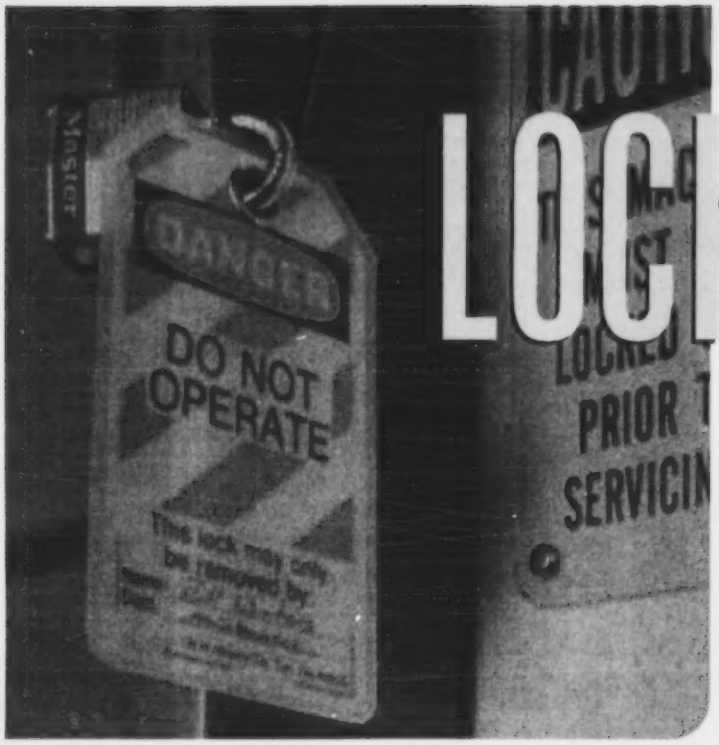
Generally speaking, people who frequently work in confined spaces have the equipment and training to protect themselves," adds Cislo. "Those who do it infrequently or don't understand there's a potential hazard might be playing a bit of Russian roulette." He recalls one person who enquired if it was all right to store and carry nitrogen cylinders in a panel van that served as a portable workshop. A similar example is that of a worker who stored dry ice in a walk-in refrigerator, unaware that the released carbon dioxide was displacing oxygen in a climate-controlled unit that had little outside air exchange.

Eliminating the hazard

The first defence against an oxygen-deficient atmosphere is to remove the hazard, such as a nitrogen cylinder, from a confined space. When using inert gas systems, always provide adequate air movement and ventilation, such as an air exchange system or exhaust or floor fans. Workers should never enter, or work in, a suspected oxygen-deficient area without a source of supplied air, either a self-contained breathing apparatus or a supplied-air breathing apparatus, complete with an emergency bottle of air hooked to a waist belt.

The only way to detect an oxygen-deficient atmosphere is with monitoring, preferably with a device that monitors the oxygen continuously. BW Technologies, for example, makes a number of portable and fixed multi-gas monitors, which provide ongoing readings of oxygen levels and instantly trigger audible and visual alarms when levels fall below safe limits.

continued on page 22



LOCKOUTS

The Key to Shutting

At home, you probably wouldn't attempt to repair wiring in an electrical socket without flipping the breaker switch to turn off the electricity.

Unfortunately, such wisdom doesn't always transfer to the workplace, where it's essential to use proper lockout and tagout procedures to isolate or neutralize energy sources during equipment repair, maintenance, testing or retooling.

The onus is on workers to use lockout and tagout to prevent inadvertent operation of equipment being serviced. That means controls – such as valves, switches or push buttons and circuit breakers – should have lockout devices to ensure they can be secured in the OFF position. While locked out, the control device should have a securely attached tag stating who has placed a lockout, when and for what reason. The tag should also include a warning not to operate the equipment while it is locked out.

Lockouts and tagouts should extend to adjacent machinery if their operation also endangers workers. When it's safe to remove the lockout device and tag, the worker who initiated the lockout is responsible for the procedure. Only in emergencies should supervisors or others remove the lockout. Like toothbrushes, locks and tags shouldn't be shared.

In another sense, however, lockouts and tagouts are tag-team events. It's a lockout AND tagout – not an EITHER/OR proposition, although for ease the two operations are commonly referred to simply as a lockout.

Alberta's occupational health and safety regulations require employers to have procedures, training and equipment needed for effective lockouts. Supplying a road map is one thing; following it is another. Lockouts depend on workers respecting them.

With pressure to save time and maintain production, it can be tempting to skip lockouts to quickly solve a problem – perhaps by jumping up and freeing a piece of stuck lumber on a sawmill conveyor belt. Once that jammed two-by-four is pried loose, the conveyor, if not locked out, may be back in business. Meanwhile, the mill worker may not be as lucky if struck by a robot arm activated once the conveyor is moving again.

Some may consider lockouts mainly a case of switching off electricity. However, it's important to lock out for pneumatic, hydraulic, steam, mechanical, thermal, chemical and other energy sources. Remember also to release stored energy – by bleeding off vapours, liquids or compressed air; discharging batteries; waiting for temperatures to go down or a spinning flywheel to stop; or by relieving tension built up in a spring or other device.

It's important to lock out for pneumatic, hydraulic, steam, mechanical, thermal, chemical and other energy sources.

According to John Wettstein of Wettstein Safety Strategies Inc., of Edmonton, organizations manage lockouts related to their main activities reasonably well. However, they may fall short in other areas. For instance, an electrical utility company likely passes muster on its electrical lockout procedures. Nevertheless, the same company may be less effective in lockout of other energy sources, say, those involving pressurized gases or fluids. The reverse may apply for a pipeline company. Both companies and individuals familiar with their own areas of expertise can forget to transfer the same cautionary procedures to activities performed less frequently.

Certainly, Alberta's oil-well-servicing sector realizes that lockouts require vigilance on several fronts.

"In our case, there are just too many risks associated with not locking out both electrical and rotating equipment," says John Anderson, health and safety manager with Grizzly Well Servicing, whose 100 employees work throughout Alberta and northeast British Columbia. For several years, Grizzly has equipped its change facilities with keys and locks colour-coded for each member of a service crew. Multi-clips on the locks ensure that employees use their own designated key to lock out equipment they're working on.

Outside eyes can help ensure all bases are covered. Len Cicero is the president of Lenco Training and Technical Services, a firm that specializes in energy control lockout procedures. In addition to training and testing clients' employees, the Burlington, Ontario, firm offers lockout audits consisting of equipment and machine surveys to identify all isolation points and all potential power sources. Lenco then drafts lockout placards that provide instruction in locking out specific equipment.

To be effective, lockout policies should be clear, have management's backing and be supported by effective training programs that ensure workers

by Nordahl Flakstad

Out Injury

understand their individual responsibilities.

Along with mistaken notions about lockouts applying only to electricity, it's also wrongly assumed they only impact authorized maintenance employees and not "affected" employees (workers in the area but not directly involved in the maintenance or repair work) such as production or operation workers.

"Lockout doesn't just apply to the millwright or the electrician," Cicero insists. In fact, production workers, if retooling or cleaning equipment, may be required to lock out equipment. They should be familiar with energy control measures and recognize the need to respect lockout.

The need to lock out energy sources of equipment is not confined to large industrial settings. For instance, inadequate or non-existent lockout procedures on dough-makers have led to serious injuries in small bakeries. And the recreational setting of a ski hill may turn deadly when lockouts are not followed. Locking out is as critical on the farm, in food processing plants and in auto repair shops as it is in lumber mills, at mines and on oil rigs.

Alberta regulations acknowledge that while a company is checking the operation of equipment, it's sometimes necessary to run the equipment. In such instances where a lockout is not possible, it is vital those working on the equipment remain in ongoing contact – by phone or other means – with whoever controls the equipment.

One of the most important elements of locking out is communication with other workers. Often, the control centre for the lockout is distant from the point where work on equipment or material will take place. In a large industrial plant, the person locking out equipment in the control room can't see the operator of the equipment in another part of the facility. It's not uncommon – for example, in the case of power lines and pipelines – for the points at which valves are shut off (isolation points) to be many kilometres apart.

"Communication is critical," stresses John Wettstein, who believes well-defined protocols strengthen distance communication. When distance is an issue, lockout protocols should include documenting the sequence of the isolation procedures for shutting off a piece of equipment or flow of liquid.

Canadian reports don't link injury statistics directly to lockout failures. However, the U.S. Department of Labor estimates that its lockout requirements avert about 120 American fatalities and 50,000 injuries annually.

Lockout procedures are about saving lives and preventing injuries. They also are also about conferring confidence and peace of mind.

Taking personal responsibility for lockouts is a bit like packing your own parachute. You have a lot riding on getting it right.

Nordahl Flakstad is an Edmonton-based writer and communications consultant.

Lockout Reminders

Employees should take the following six basic steps when performing a lockout.

1. Shut down the equipment.
2. Check the moving parts to see if they've stopped.
3. Shut off and put on the correct lock at each place where you isolate the energy source. Do this in order. Never skip a step. Fill out and attach a tag to each lock as you go along.
4. Check it. Test circuits for electricity. Check that switches and valves are turned off and locked. Check gauges for zero pressure. Turn the operating controls on to see if the main energy is still getting through. Turn them off again.
5. Neutralize the stored energy – release or block off all parts under tension or pressure, wait for temperatures to go down, disconnect, drain or vent whatever is necessary to clean out the system.
6. Check it. Pressure gauges should be zero. Look for movement in the system. Listen for release of air or liquid.

Employers should:

- Develop a lockout policy
- Identify lockout situations
- Develop lockout procedures
- Train workers in lockout procedures
- Enforce and update lockout policy

Based on information provided by the Industrial Accident Prevention Association, Ontario

Falling Short

Remember, even when equipment is locked out, injuries may result from:

- Not confirming the right piece of equipment is locked out.
- Not bleeding off or eliminating stored energy.
- Depending on someone else to place or remove the lockout.

Resources

WEB LINKS

www.aomc.org/HOD2/general/Accinjpr-LOCKOUT_.html
Seven steps for lockout/tagout from the Arnot Ogden Medical Center

www.niehs.nih.gov/odhsb/manual/man11h.htm
Lockout/tagout policy from NIEHS (National Institute of Environmental Health Sciences)

www.osha-slc.gov/SLTC/controlhazardousenergy
OSHA (Occupational Safety and Health Administration) links to information on lockouts.

www.worksafebc.com/publications/Health_and_Safety_Information/by_industry/assets/pdf/lockout.pdf

Booklet from Worksafe B.C. (B.C. Workers' Compensation Board)

IN THE ALBERTA GOVERNMENT LIBRARY – LABOUR BUILDING

Books

OSHA's Electrical Safety and Lockout Standards: Proven Written Programs for Compliance
by Mark Moran
Rockville MD., Government Institutes, 1996
(TK 152 M64 1996)

Videos

High Impact Lockout Safety, 20 min.
Eight incident reenactments demonstrate the importance of following all prescribed lockout procedures. VC0324)

Lockout Procedure, 9 min.
Safe procedures for cleaning, adjusting or performing maintenance on industrial equipment. (VC0290)

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WEB LINKS

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OSHA's Electrical Safety and Lockout Standards: Proven Written Programs for Compliance

High Impact Lockout Safety, 20 min.

Lockout Procedure, 9 min.

RECORD IT RIGHT, REPORT IT RIGHT

How to record and report job-related injuries, illnesses and incidents in Alberta

special pull-out

RECORD INCIDENTS

Employers must maintain a record book

- **Enter details of all reported injuries and illnesses, and keep for three years.**
- **Include the following information to meet the requirements of the *Workers' Compensation Act* and the *Occupational Health and Safety Act* and associated regulations.**
  - (a) the full name of the injured worker
  - (b) the date, place and time of the illness or injury (incident)
  - (c) the date and time that the incident was reported or that the employer found out about it
  - (d) the cause of the incident
  - (e) a description of the injury
  - (f) the first aid/medical treatment rendered
  - (g) qualifications of the first aider
- **Use terms defined in the *Workers' Compensation Act* to describe the injury and the medical treatment and to decide when and what to report.**

  First aid
  Treatment given on the work site by a first aid attendant
  The worker is able to return to the job during the same shift or on the next scheduled shift. Additional treatment is not needed. (Do not report first aid incidents. Just record them for authorized inspection.)

  Medical aid
  Treatment that continues beyond first aid on the first day
  The worker returns to work on the same or next scheduled shift, during treatment. The job may be different or the work may be modified to accommodate the injury.
  Examples:
  A worker returns to work in the same or a different job but needs ongoing physiotherapy.
  A worker suffers hearing loss that needs ongoing attention, but continues in the same or a different job.

  Disabling or lost-time injury
  Treatment for an injury or illness that keeps the worker from returning to the job on the same or the following shift.

- **To meet the requirements of the *Occupational Health and Safety Act* and regulations, you must record details of:**
  - an injury or incident that results in death
  - an injury or incident that results in a worker's being admitted to a hospital for more than two days
  - an unplanned or uncontrolled explosion, fire or flood that causes serious injury or that has the potential of causing serious injury
  - the collapse or upset of a crane, derrick or hoist, or structure necessary for the structural integrity of the building or structure
  - the collapse or failure of any component of a building or structure necessary for the structural integrity of the building or structure

For Workplace Health and Safety you must record and report all incidents where death or serious injury occurs, and you must report incidents as soon as possible where there was or could still be potential for death and serious injury.

REPORT INCIDENTS

	Report to		
	Supervisor (Employer)	**Workers' Compensation Board (WCB) – Alberta (780) 498-4000**	**Workplace Health and Safety (WHS), Alberta Human Resources and Employment 1-866-415-8690**
Workers report	**Job-related injuries and illnesses if they require first aid or medical aid.**	**Injury or illness if it is likely to keep the worker off the job past the first day of the occurrence.**	
Employers report		**Medical aid or disabling (lost-time) injuries** It is not necessary to report first aid injuries, but it is necessary to keep detailed records for three years.	**Details of specified serious incidents** The list of specified incidents includes: • fatalities • an injury or incident that results in admission to hospital for more than two days • an unplanned or uncontrolled explosion, fire or flood that causes a serious injury or that has the potential of causing serious injury • the collapse or upset of a crane, derrick or hoist, or structure that is necessary for the structural integrity of a building or structure
Physicians report			**Physicians must report to a director of medical services* or to WHS** any occurrence of specified diseases. The list of notifiable diseases currently includes coal worker's pneumoconiosis, silicosis, asbestosis, mesothelioma and asbestos-related lung, laryngeal or gastrointestinal cancer *As defined in the *Occupational Health and Safety Act*.

Do you use OSHA recording and reporting guidelines?

Some Alberta employers use U.S. Occupational Safety and Health Administration (OSHA) guidelines to track injury prevention performance.

These employers must still comply with the Alberta *Occupational Health and Safety Act*, the *Workers' Compensation Act* and the regulations associated with both.

Employers must also collect all information required by WHS and WCB and use the correct terms when reporting.

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  First aid
  Treatment given on the work site by a first aid attendant
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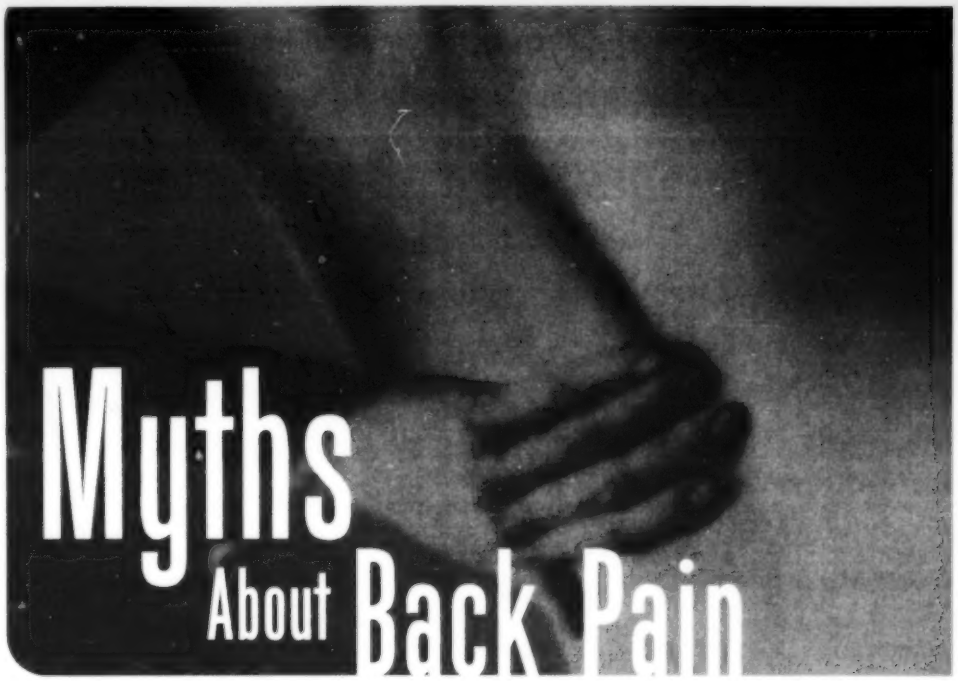


Seven Myths About Back Pain

by Ray Cislo

As reported in the May 2002 issue of this magazine, up to 80 per cent of adults will experience back pain at some time during their lives. Let's take a closer look at the seven myths about back pain mentioned in that issue.

MYTH 1

If you've slipped a disk (also known as a herniated or ruptured disk), you must have surgery. Surgeons agree about exactly who should have surgery.

TRUTH

The causes of back pain can be complex and difficult to diagnose. For more than 70 per cent of patients with chronic back pain, it's not possible to make a specific diagnosis pinpointing the cause of the pain.

Surgery to relieve back pain should only be used as a last resort. Very specific tests should be done to confirm that a disk has been damaged and that the pain is directly related to this damage. Even if tests show a damaged disk, recovery often occurs without surgery. Studies using magnetic resonance imaging (MRI) have shown that the herniated part of the disk often shrinks on its own over time.

Approximately 90 per cent of patients with a herniated disk improve gradually over a period of six weeks. The remaining 10 per cent of patients seem to be good candidates for surgery. However, herniated disks don't cause most back pain! Only two per cent of back pain patients are likely to benefit from surgery. Most specialists agree that non-surgical treatment should be tried first.

MYTH 2

X-ray images, CT and MRI scans can always identify the cause of pain.

TRUTH

Abnormalities of the spine are as common in people without back pain as they are in people suffering from back pain. Getting a better quality image of a herniated disk, in the absence of a thorough physical examination, leaves you only with a better picture, not necessarily a better diagnosis. Even the best imaging tests cannot identify muscle spasms or strained ligaments that might be the cause of a patient's pain. Many doctors only recommend CT and MRI scans for those patients already heading for surgery for other reasons.

MYTH 3

If your back hurts, you should take it easy until the pain goes away.

TRUTH

Today's thinking is to continue the routine activities of daily living and work as normally as possible. Persons who remain active do better than those who try either bed rest or immediate exercise.

Not all workers can immediately return to work. Those with physically demanding jobs may not be able to return to work as quickly as those with less demanding or sedentary jobs. It is often helpful to have workers with back pain return to some form of light work until they recover more fully.

MYTH 4

Most back pain is caused by injuries or heavy lifting.

TRUTH

It's true that workers whose jobs involve lifting, lowering and carrying materials are much more likely to experience lower back pain than workers who don't do this kind of work. It's also true that the weight of the materials is a risk factor for injury, as is how often the materials are handled and the worker's posture when doing the work. For example, working doubled over in a cramped space is harder on your back than working upright.

However, it's also true that people who work at sedentary occupations are at a higher risk of disk injury than those who do moderate amounts of physical work. And regardless of whether or not the work involves lifting, people are more likely to be injured early in the morning, when their backs are stiffer, than later in the workday.

Up to 85 per cent of persons with back pain can't recall a specific incident that brought on their pain. While heavy lifting or injuries are risk factors for back pain, they don't account for most episodes of pain.

Consider some of these other factors:
Age – the highest frequency of reported symptoms for back pain occurs between the ages of 35 and 55.
Gender – if you're male, your risk of injury peaks at approximately 40 years of age; among women, the peak occurs between 50 and 60 years of age.
Lifestyle – smoking and being overweight are two other factors linked to lower back pain. A connection has also been made between stressful life events and back pain.

MYTH 5
Back pain is usually disabling.

TRUTH
Most people with back pain get better, regardless of whether they receive treatment or the treatment method used. Most people who leave work return within six weeks, and only a small percentage never return to their jobs. That's the good news.

The bad news? If you've experienced back pain in the past, you're at greater risk of experiencing it again. Fortunately, recurring episodes of pain usually go away on their own, just like the original back attack did.

MYTH 6
Everyone with back pain should have a spinal X-ray.

TRUTH
Routine X-rays of the spine are unnecessary and often of little value. The spine abnormalities detected with X-rays often have nothing to do with the symptoms experienced. Many people have abnormalities and are completely pain-free.

The latest medical guidelines for evaluating back pain recommend that the use of X-rays be limited to patients who have suffered major injuries.

MYTH 7
Bed rest is the mainstay of therapy.

TRUTH
For the longest time, patients with back pain were told to lie down to get better. While many patients experienced less pain while lying down, it was not always the case that they got better. Studies have shown that four days of bed rest turn out to be no more effective than two days, or even no bed rest at all. Imagine what it felt like to get up after one to two weeks of strict bed rest – the recommended practice not that long ago.

Who can cure the pain?

If pain symptoms disappear while a patient is in the care of a particular type of health practitioner, the patient often believes that it was the type of care (chiropractic, acupuncture, physiotherapy, naturopathy, surgery, etc.) that eliminated the pain. While this may be the case, back pain normally resolves on its own.

So what is a person to do? If back pain affects your ability to function, see a health practitioner you trust. That person can rule out the possibility of an underlying medical condition and may be able to help you treat the cause of your back pain. Take the practitioner's advice and do the things necessary to take care of yourself to make that pain a distant memory.

Sources

"Low-Back Pain," by R.A. Deyo, *Scientific American*, August 1998.

"Occupational Low Back Disorder Causation and Control," by W.A. Marras, *Ergonomics*, Vol. 43, No. 7.

Ray Cislo, P.Eng., B.Sc., (H.K.) is a safety engineering specialist at Workplace Health and Safety.

Resources

WEB LINKS

www.spine-health.com/topics/cd/myths/myth01.html
Myths and realities about back pain.

www.safety.duke.edu/Newsletter/prev_bkinj.htm
How to prevent back injury, from Duke University.

IN THE ALBERTA GOVERNMENT LIBRARY – LABOUR BUILDING

Books

The Low Back Pain Handbook: A Practical Guide for the Primary Care Clinician
by Andrew J. Cole
Philadelphia PA: Hanley & Belfus Inc.
(RD 771 B217 C65 1997)

"Low Back Pain," Occupational Medicine: State of the Art Reviews, Volume 113, No 1, January – March 1998
by Gerard A. Malanga
Philadelphia, PA: Hanley & Belfus
(RD 768 L68 1998)

Ergonomics in Back Pain: A Guide to Prevention and Rehabilitation
by Taren Khalil, et al
New York, New York: Van Nostrand Reinhold
(RD 771 B217 E74 1993)

Videos

Lifting and Carrying, 10 min.
Highlights construction of the spine and its limitations. Illustrates how and why injuries will occur if we do not respect the limitations and use correct lifting and carrying techniques. (VC0350, 2001)

Bringing Home the Haz

by Debbie Culbertson

The construction worker carefully taped a wall of plastic across the middle of my kitchen and over the two doors that led out of the room. He was getting ready to put in a new window, and didn't want any drywall or wood dust to fly into the rest of the house or onto the stove or counter tops. When he had finished the job, he carefully removed the plastic and swept up the mess on the floor.

I couldn't help but admire the thoughtful and tidy approach he'd taken. Then I saw him take off his dirty overalls and throw them into his truck. My house was kept free of dust, but what about his truck? I knew that his children often rode in the vehicle with him. Weren't they being exposed to this hazard, too?

Silent Hazards

According to Diane Radnoff, senior occupational health and safety hygienist at Workplace Health and Safety, workers often underestimate the kinds of health hazards they might bring home with them. "People working in fields such as home renovating, painting and cleaning don't always think of the materials they're working with as toxic," says Radnoff. "Depending on the trade they're in, they may bring home clothing that is covered in wood dust or other chemicals."

When a worker gets home, he may casually throw his overalls onto the dirty clothes pile, creating a silent hazard for whoever does the laundry. If he walks around the house in his work shoes, he may contaminate the carpet that his young children may be crawling on. And if he hugs his wife or plays with his children before he has had a shower, he may be unknowingly putting their health at risk.

According to a groundbreaking 1995 study by the National Institute for Occupational Safety and Health (NIOSH), workers in more than 28 countries and 36 American states have reported unwittingly transporting toxins home from work sites. These have included mercury, radioactive material, beryllium, lead, asbestos, pesticides and more. The toxins have been carried on shoes, socks, clothes, hair, tools, folders and briefcases.

Even the mildest exposure to some materials commonly found on work clothes can cause huge health problems. The dust from imported woods such as western red cedar can create serious allergies in anyone who is exposed to it. Fibres from fibreglass can cause skin and eye irritations. Particles of beryllium, a lightweight metal used in transistors, dental work and semiconductor chips, can cause a crippling and incurable lung disease.

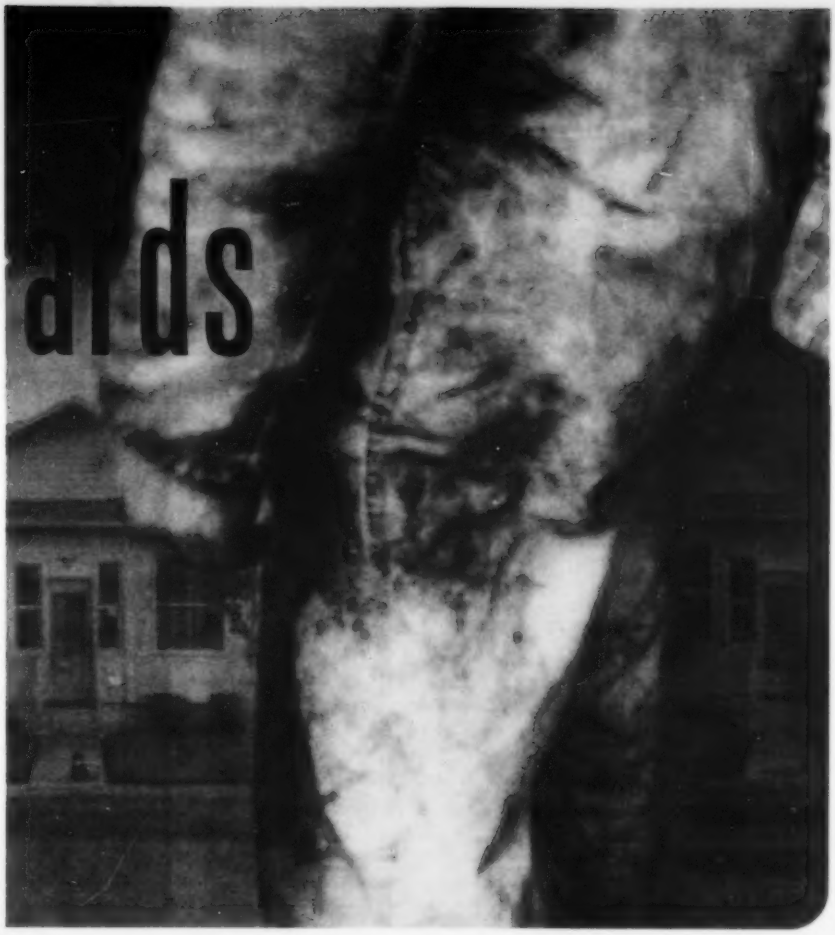
Lead is one of the most common hazards carried home on a worker's skin, hair, clothing or shoes. Researchers estimate that between 1981 and 1983, 48,000 families with children under six years of age in the United States were living with family members who were regularly exposed to lead in their workplace. These same researchers believe that half of the children in these families may have elevated blood lead levels. Family members exposed to lead poisoning may experience fatigue, upset stomach, muscle pain, as well as brain disorders, kidney damage and permanent learning disabilities.

Dangerous substances are not only carried home on a worker's body. Glues, pesticides, strippers, degreasers, and other toxins are often carelessly thrown into the back of a truck at the end of a long and tiring work day. "Children may be curious about what is in dad's tool box," says Diane Radnoff. "But the things they find can be poisonous; even mild exposure to something like mercury or lead solder can be extremely dangerous." Serious and fatal poisonings of family members have also been caused by toxins on bags, rags, metal drums and scrap lumber.

Many chemicals can cause reproductive problems in workers and their partners. NIOSH reports that more than 1,000 workplace chemicals have been shown to have reproductive effects on animals, although most have not been studied in humans. In addition, most of the four million other chemical mixtures in commercial use remain untested. However, the dangers presented by some chemicals are all too well known. Lead is hazardous to the reproductive organs in both women and men, and can lower sexual drive and function.

Industrial and construction workers are not the only people whose work with dangerous substances can have a lasting effect on their families. Artists who work with ceramics have been known to accidentally poison their families with lead. Farmers have brought home pesticides, caustic substances, and hormone-like chemicals on their overalls and soles of their boots. And radioactivity is becoming a growing hazard to medical researchers, nuclear pharmacists, health care professionals and their families.

"In some procedures, radioactive isotopes are used to test urine," says Harold Braun, a cardiac care nurse in



Calgary. "If pregnant nurses do these tests, they may endanger their unborn children. Proper procedure is for them to ask another nurse to do the test for them."

Avoiding the Risk

Diane Radnoff says there are many precautions that workers can take to avoid bringing hazards home from the workplace. "It all comes down to common sense. Shower at work and leave your work boots and coveralls there," says Radnoff. "If you have to bring clothes home, put them in a garbage bag and tie it up. Put the bag in the trunk of your vehicle. Dump the clothes straight into the washer and don't launder any other items with them."

Harold Braun echoes Radnoff's emphasis on basic prevention. "Every person working in the health care field takes what we call 'universal precautions,'" says Braun. "That includes hand washing between every patient contact, wearing gloves when handling body fluids, and putting on protective face masks when needed." In this way, infections and disease are not passed on to other patients, workers and family members.

Employers must put safety procedures into place to prevent contamination from travelling home with workers. These can include providing changing and shower rooms, disposable work clothes, laundry facilities and, in certain settings, providing electronic monitors to detect radiation. Informing workers about how to avoid bringing hazards home is also an essential part of any safety program.

Who, Me? Why Worry?

Workers may argue that the materials they work with haven't been proven to cause health risks. But they should pause and reflect on the long list of asbestos-related deaths listed in each issue of this magazine. According to NIOSH, hidden behind each of these names is a family that was probably exposed to a very dangerous substance that was once considered "safe." Is bringing home soiled overalls worth the risk?

Debbie Culbertson is a writer and editor living in Devon, Alberta.

Avoid Bringing Hazards Home

Workers can take these steps to avoid bringing hazards home

- Change clothes before leaving work and leave soiled clothes behind. Alternatively, wear disposable clothes. Throw them out after use.
- If you must take work clothes home, put them in a garbage bag and tie it up.
- Put the bag of work clothes in the trunk of your vehicle.
- Keep soiled clothes away from other laundry and wash them separately.
- Shower and wash your hair before leaving your workplace.
- Do not take tools, scrap, chemicals, packaging and similar items home.
- Prevent family members from visiting the work area.

Employers should

- Inform workers about safety practices to reduce exposure to contaminants.
- Ensure that workers follow these safety practices.
- Provide effective monitoring systems for contaminants.
- If possible, provide changing rooms, showers, laundry services and/or disposable clothing.

Resources

WEB LINKS

www.usatoday.com/money/bighits/toxin1.htm
Cover article from USA Today about workers unwittingly bringing home toxins

www.usatoday.com/money/bighits/toxin4.htm
Common workplace toxins that are taken home

www.usatoday.com/money/bighits/toxin3.htm
Cases of home contamination from workplace toxins

www.webworld.nc.com/wes-con/workshop.htm
Safety in your home and workshop – tailgate talk

www.diyonline.com/servlet/GIB_Base1/diylib_article.html?session.docid=1001
Home hazards

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WEB LINKS

www.usatoday.com/money/lights/taxm1.htm
Great article from USA Today about workers unwittingly bringing home hazards.

www.usatoday.com/money/lights/taxm4.htm
Common workplace hazards that are taken home.

www.usatoday.com/money/lights/taxm2.htm
Cases of home contamination from workplace hazards.

www.getsworldcom.com/aws-con/aws0sup.htm
Safety in your home and workplace – Lifestyle Site

www.findyouhome.com/servlet/GIR_BaseEdbylib-article.html?av=am.dm.id=3001
Home hazards

Web Watcher

by Bob Christie

The task I've undertaken – to provide you with useful, credible occupational health and safety Web addresses – reminds me of the story of the man who decided he would try the cuisine at every restaurant in New York City by working through the restaurants listed in the phone book. He ate at a different restaurant every evening. Before he got to the Ms in the phone book, there were more new restaurants that had opened in the A to L section than he had visited. Also, more than half of the restaurants he had visited no longer existed.

Such is the case with the World Wide Web. As I write this article, Google, one of the premier search engines on the Internet, now claims to have over two BILLION pages in its database. This number is growing all the time, and Google admits its database doesn't include all pages. Like the number of McDonald's hamburgers eaten, the number of Web pages begins to numb the consciousness. I digress from the task at hand because I need to explain why I have not included the most recent Alberta sites, even some sites that have been suggested to me. It is not because I don't think the sites worthy. It's just that to include all relevant sites would make this magazine too heavy to carry. For the next couple of issues I'd like to look at some sites based outside Alberta that have a national perspective. Then I propose to go international, to give you a sampling of sites you can start from to build a virtual library that really works for you.

Canadian not-for-profit Web sites

Entering the words "health, safety and Canada" in the search engine produced just over a million hits, so I'm keeping the list to the bare essentials.

Canadian Centre for Occupational Health and Safety
www.ccohs.ca/

Health Canada, Office of Laboratory Security (MSDS source)
www.hc-sc.gc.ca/pphb-dgspsp/msds-ftss/index.html

Human Resources Development Canada, Occupational Health and Safety (Labour Operations)
info.load-otea.hrdc-drhc.gc.ca/~oshweb/homeen.shtml

Human Resources Development Canada, Federal Labour Legislation, Canada Labour Code, Part I (Parts II and III can also be accessed)
info.load-otea.hrdcdrhc.gc.ca/federal_legislation/part1/part1.htm

Canosh (Canada's National Occupational Health and Safety Web site)
www.canoshweb.org/en/

Canadian Auto Workers – health, safety and environment
www.caw.ca/whatwedo/health&safety/index.asp

Department of Justice Canada (Canada Labour Code)
laws.justice.gc.ca/en/L-2/

Communications, Energy and Paperworkers Union of Canada – health, safety and environment
www.cep.ca/health_safety/health_e.html

St. John Ambulance Canada – health and safety training
www.sja.ca/english/health_safety_training/index.asp

I.W.A. Canada – Health & Safety Web page
www.iwa.ca/WEBSITE/h&scontents.html

Canadian Labour Congress – Health & Safety, Day of Mourning, April 28th
www.clc-ctc.ca/health-safety/mourning.html

Workinfonet.ca, Workplace Issues and Supports, Occupational Health and Safety (a Web site list of Web sites)
www.workinfonet.ca/cwn/english/index.cfm?cat=6&sub=69

Next issue will feature more not-for-profit agencies with a national scope and perhaps a few from private, for-profit sources. If you want sites for particular provinces or regions outside of Alberta, you will have to do a little hunting on your own. Happy surfing.

Bob Christie is a partner at Christie Communications Ltd., a multimedia development company in Edmonton. Bob also supplies most of the Web link resources for the articles in this magazine.

Real World Solutions

Real World Solutions is a regular column that suggests simple, inexpensive ways to improve employee safety and health through adjustments to the workplace. What improvements have you made at your workplace?

If you've found a solution worth sharing, please send it to ray.cislo@gov.ab.ca.

Pressure on the elbow

The Problem
Sharp corners or joints on workbenches and desks can put pressure on the ulnar (funny bone) nerve. This can be painful and affect the hand's ability to grip objects. Long-term pressure can permanently damage the nerve.

A Solution
Place soft, rounded pads over edges and sharp corners.

Benefit
No short- or long-term pain. No injury. Improved productivity.

Dow Defies the Odds

by Norma Ramage

When the Dow Chemical Company announced in 1994 its global goal of reducing reportable safety incidents by 90 per cent within 10 years, it caused major ripples through the chemical giant's worldwide operations.

Phil Wilson, environment, health and safety leader with Dow's Fort Saskatchewan manufacturing operation, recalls, "We said to them, you're nuts, there's no way we can achieve that goal." Today, however, Wilson says the $4 billion Fort Saskatchewan facility (one of two Dow plants in Alberta; the other is a facility in Prentice acquired after last year's merger with Union Carbide) is on track for reaching the targeted reduction by 2005.

Workers' Compensation Board – Alberta (WCB) statistics show that Dow, which already had a good safety record prior to starting the program in January, 1995 – at a lost-time claims rate (LTC) of 1.99 per 100 person hours worked – continues the downward trend of reducing incidents. In 2000 the LTC rate dropped to 0.2, and this year to date the rate is 0.

What makes this achievement more impressive is that Dow doesn't target only lost-time incidents, but any reportable incident. Says Wilson, "Anything that requires more than basic first aid, even a single stitch, is included."

How have they done it? By changing employee behaviour, says Wilson. The company uses a behaviour-based safety (BBS) process, which aims at getting employees to think about the safe way to do their jobs. "We don't look at hazards," explains Wilson. "We look at behaviours."

Safety reminders are everywhere on the sprawling site, which includes five distinct plants, from the sign at the front gates proclaiming the intention of becoming a zero incident plant, to safety reminders in hallways and on work floors. Says Wilson, "We live in an environment where we believe that zero incidents is something that can be achieved."

Dow continues the downward trend of reducing incidents. In 2000 the LTC rate dropped to 0.2, and this year to date the rate is 0.

Dow's 850 employees at the Fort Saskatchewan site, plus its 400 to 500 contractors, all follow a BBS program. Contractors must either have their own program or sign on to Dow's.

Wilson says the key to the program is individual responsibility. Employees are encouraged to observe each other, and comment and act on both positive and potentially hazardous behaviours. The company trains a number of employees as observers, says Wilson, and they are "required to talk to the worker they have observed, either to say thanks for working safely, or if the behaviour is unacceptable, to discuss a safer way of doing things. It's this peer to peer interaction that's the key to the program."

In addition to trained observers, Dow encourages every employee and contractor to take action if they see an unsafe behaviour. Wray Kinsella, a pipefitter who works with contractor Jacobs Catalytic, says people working on site are "very vocal" about safety. "No one is afraid to tell someone they're doing something wrong."

Kinsella, a member of an employee committee that conducts regular safety audits, says he is proof that the Dow BBS program actually does change behaviour when it comes to working safely. For 20 years Kinsella worked as an independent contractor and he admits that he sometimes took unsafe shortcuts. "After a year and a half here, I have changed my habits and my whole attitude toward safety."

Although the BBS process wasn't created by Dow, and similar programs are being used by other Alberta companies, Dow has created some innovative implementation tools. To Wilson, one of the most important tools is the pre-task analysis. It requires every worker, before starting a job, to fill out a card listing all of the tasks required, any potential hazards and measures that can be used to eliminate those hazards.

For Kinsella, the value of the task cards is that "they get you to think about your job and how to do it safely."

Another valuable item in the toolbox is the Near Miss Program. Workers fill out special cards recording any potential hazard or unsafe behaviour they have observed and the actions they have taken to rectify the problem. Says Wilson, "When we say near miss, we're not talking about someone almost being struck by a piece of metal. We're talking about the minutiae of safety situations, such as the paint can at the top of the stairs that needs to be moved to a safer place." He says not only is it important that employees take remedial action, it's also important that they fill out the incident card. "That way I can report back to them and tell them, for example, that last month 800 potential unsafe behaviours were prevented by actions taken by workers."

To encourage employees to fill out the near miss cards, there are weekly draws with small cash awards and other prizes.

As with any safety program, management buy-in and support is critical. Vince Smith, president and CEO of Dow Chemical Canada Inc., personally follows up on all incidents. "I don't get involved when the investigation is ongoing, but after it is over, I get the supervisor to take me out to the area where it occurred and explain what happened."

One of the most important things the company has done, says Smith, is ensure that the financial and manpower resources are available to achieve the company's safety and environmental goals.

And Kinsella says Dow walks the talk. "From day one, it's safety, safety, safety. They tell you that if you feel a job is unsafe, you can shut it down."

John Brogly, leader of the design and construction group at the Fort Saskatchewan plant, is closely involved in the BBS program and believes there is another, harder to quantify reason for the plant's success. "We set very aggressive goals, and we soon realized that to accomplish them we would have to be innovative and adopt out-of-the-box thinking. Instead of scratching our heads and saying it couldn't be done, we found a way."

Brogly, who is also president of the Alberta Construction Owners Association, has discussed the Dow program with his group and received positive feedback. The program also attracted the attention of Clint Dunford, Minister of Alberta Human Resources and Employment, who visited the Fort Saskatchewan plant last fall.

Says Wilson, "One of the biggest values of the program is with our contractor workforce. Through them we are influencing not just our site or our company, but sites all across the province. Little by little we are seeing behaviour-based safety bear fruit among construction owners."

Norma Ramage is a freelance writer and communications consultant living in Calgary.

Resources

WEB LINKS

www.dow.com/facilities/namerica/canada/index.htm
Dow Chemical Canada

www.dow.com/Homepage/index.html
Main site for Dow Chemical

Contact WHS anytime...

For occupational health and safety information and assistance, phone the Call Centre 1-866-415-8690 or go to the WHS Web site www.whs.gov.ab.ca.

New reg news!

Sign up for new WHS postings and be the first to receive information about the new regulation and any other new information posted to the WHS Web site. When you sign up, you will receive by e-mail, regular monthly summaries of all new Web site postings. Sign up for this FREE subscription service through www.whs.gov.ab.ca.

How to reach the Alberta Government Library – Labour Building Site

The URL for the library is www.gov.ab.ca/hre/library.

Access the library catalogue at draweb.library.ualberta.ca.

The library houses a large selection of occupational health and safety information materials. You can search the library catalogue over the Web through gate.library.ualberta.ca, location code, **AB HR & Employment**.

To borrow materials, please contact your local library and make your requests through the inter-library loan process.

Or visit the library at:

3rd Floor, 10808 – 99 Avenue
Edmonton, Alberta T5K 0G5

(780) 427-8533 or toll-free, 310-0000
(780) 422-0084
www.gov.ab.ca/hre/facts/av

How to order Workplace Health and Safety publications

Workplace Health and Safety publications are available from the WHS Web site, www.whs.gov.ab.ca, or the WHS Call Centre, 1-866-415-8690.

WHS is a division of Alberta Human Resources and Employment and falls under the jurisdiction of Minister Clint Dunford.

Ron Holtz (second from right) and his R-Alta team.

Pullin' Down the Rates

As the owner of a small oilfield service and rental company, Ron Holtz pays Workers' Compensation Board – Alberta (WCB) insurance premiums so that both he and his workers are covered in the event of workplace illness or injury. However, WCB coverage costs money.

"I was upset when I saw that my premiums were going up again this year, because when you operate a small company, a few extra hundred dollars a year makes a difference," Ron says.

The average WCB premium rate has increased over the past two years because of rising claims costs, in particular medical costs, to treat injured workers. Hundreds of workers in Alberta's booming oil and gas industry get injured on the job every year, which impacts WCB premiums for all businesses in that sector, large or small.

It's frustrating for employers like Ron, who have very few or no WCB claims, to watch their rates increase, despite good safety records. Although a small employer like Ron has no direct control over his industry's overall safety record, he is taking action to reduce his company's WCB premiums.

Ron is one of 5,700 employers who have joined Partners in Injury Reduction (PIR) over the past two years. Thanks to Ron's efforts, his rates will be slashed by 20 per cent this year.

The financial saving is not the only bonus to joining PIR. Learning about injury prevention has raised workplace safety awareness in Ron's shop. "It's so worthwhile, because we don't want anyone getting hurt," he says. "Safety is an essential part of doing our job."

"Join," advises James Wilson, the WCB manager responsible for PIR. "You'll save money and you'll sleep better at night, knowing your employees are that much more aware of safety on the job."

To join PIR, Ron made an initial safety investment by joining the Partnerships program, through which he arranged to have a health and safety audit of his company. The audit ensured the company had a health and safety management system that met provincial standards and provided a healthy and safe work environment for its employees. The Certifying Partner, Petroleum Industry Training Service (PITS), reviewed the audit and then Alberta Human Resources and Employment issued a Certificate of Recognition (COR) to R-Alta.

With a COR, R-Alta became automatically eligible for a rebate through the PIR program. Ron estimates he put in about $400 and 60 hours developing a safety system and attending a two-day course. But that time and money are paying off. Having his COR has brought in more business, as bigger clients insist contractors like R-Alta be certified before they go on site.

"It's good to know you can send a guy out there and there won't be any questions about safety," Ron says. "Being part of PIR has really made a difference to my bottom line, and most of all, to my guys' safety."

Article courtesy of Workers' Compensation Board – Alberta.

Partnerships in HEALTH and SAFETY

What is Parnerships?

Partnerships in Health and Safety is a province-wide injury prevention program sponsored co-operatively by government, labour and industry.

For more information about the Partnerships program, call (780) 427-8842 or toll-free 310-0000.

Partners in Injury Prevention (PIR)

PIR rewards safe employers with rate discounts. The WCB is moving away from blanket subsidies for all employers, so employers with excellent safety records pay lower rates than those with poor safety performance. Employers who participate in PIR have 15 per cent fewer workplace injuries and 31 per cent lower claims costs than other employers.

Did you know?

- **5,700 employers have joined PIR since 2000**
- **It's free to join – although you must earn a Certificate of Recognition to qualify for a refund**

Certificate of Recognition (COR)

- **The COR is administered by Alberta Human Resources and Employment and 15 certifying partners under the Partnerships program**
- **4,100 employers in Alberta have earned their COR**
- **Having a COR guarantees a 5% rebate from the WCB**

reporting on recent

convictions

under the *Occupational Health and Safety Act*

Employer
Round Corner Welding & Machining

Prime Contractor
Lakeland College

Incident
On December 8, 2000, an 18-year-old worker was sandblasting a shower room at the Lakeland College pool, when he was overcome by toxic vapours that had entered his supplied air. He has recovered.

Violation
Round Corner Welding & Machining failed to provide the worker with adequate equipment or training to do the sandblasting. (Section 2(1)(a)(i) of the *Occupational Health and Safety Act*; Section 99, 448/83, of the *General Safety Regulation*) Lakeland College failed to implement safety procedures. The contractor was therefore not in compliance with legislation that regulates prime contractors. (Section 2.1(3), *Occupational Health and Safety Act*)

Fine
Round Corner Welding & Machining was fined $5,000.
Lakeland College was fined $1,000, plus a 15% victim surcharge. The college is also required to provide $19,000 worth of safety-related courses to further awareness of occupational health and safety.

Employer
Millar Western

Incident
A 17-year-old was working at a sawmill as part of a work-experience program. On November 5, 2000, he was working close to a conveyor as a member of a clean-up crew. He became caught between the unguarded conveyor drive roller and belt, which dragged him into the rollers, killing him. He was working unsupervised around unguarded, moving equipment.

Violation
The company was found guilty of two counts of failing to provide guards around moving parts of machinery. (Sections 52(1)(a) and 52(1)(b) of the *General Safety Regulation.*)

Fine
Millar Western was fined $75,000 for each count, plus a 15% victim surcharge, for a total of $172,500.

Employer
Fountain Tire (Fairview) Ltd.

Incident
On September 15, 2000, two tire service technicians employed by Fountain Tire (Fairview) Ltd. were mounting a 60-centimetre-rim tire onto a grader. To seal the tire to the rim, they started to inflate the tire. The air inside the tire exploded, and the rim components and tire blew off the grader, striking both workers. One worker received minor injuries, and the other, a 23-year-old, received head injuries and died the next day.

Violation
Fountain Tire did not have a tire cage or a restraining device large enough to handle large off-road tires. Workers were not trained in the company's own safety standards nor in the manufacturer's specifications concerning servicing of large off-road tires. The company was found guilty of failing to ensure the safety of workers and of failing to make them aware of their responsibilities. (Section Sec 2(1)(a)(i), *Occupational Health & Safety Act*)

Fine
$75,000, plus a $11,250 victim surcharge.

Full fatality reports are available on the Workplace Health and Safety (WHS) Web site, www.whs.gov.ab.ca. They can also be ordered from the Alberta Government Library – Labour Building Site, (780) 427-8533 (toll free 310-0000).

Oxygen-deficient atmospheres

continued from page 9

"The technology has become a lot faster, smarter, cheaper and easier to use," says BW's Greg Rude. "Before, a fair bit of training was required, and the units needed some calibration. Now, the microprocessor does that automatically, and after two years, you just buy a new one."

As well, those working in areas where significant quantities of inert gases are being used should understand the physical properties of those gases, such as whether they are heavier or lighter than air. Alberta's *General Safety Regulation* also requires employers to develop a code of practice for entry to and work in confined spaces.

Bill Corbett is a Calgary writer.

Resources

WEB LINKS

www.sierramonitor.com/pdf/Safety%20Bulletin-Oxygen%20Deficient.PDF
A safety bulletin from the Compressed Gas Association about oxygen-deficient atmospheres.

www.msha.gov/regs/complian/PIB/1996/PIB96-19.HTM
An information bulletin from the U.S. Department of Labor on oxygen deficiency in mines.

www.levitt-safety.com/SafetyTips/ConfinedDangerous.pdf
Confined spaces and oxygen deficiency, from Levitt-Safety.

bse.wisc.edu/wiscash/DocumentsPDF/checkstuffers/manure.pdf
Oxygen-deficient atmospheres in agriculture.

www.doe-md.gov/lessonslearned.asp
Lessons learned about confined spaces from the U.S. Department of Energy.

IN THE ALBERTA GOVERNMENT LIBRARY – LABOUR BUILDING

Books

Confined Space: A Manual of Standard Practices
Richmond, B.C.: Workers' Compensation Board of British Columbia, 1994. (revised ed.)
(T55 C662 1994)

Complete Confined Spaces Handbook
by John Rekus.
Boca Raton, Florida: Lewis Publishers, 1994.
(T55 R45 1994)

Safety and Health in Confined Spaces
by Neil McManus.
Boca Raton, Florida: Lewis Publishers, 1999.
(T55 M39 1999)

Videos

Confined Space Safety, 1991, 12 min.
Covers the basic principles of working in a confined space and highlights the need to follow safe work procedures. (VC 0218)

Confined Space Safety, 2000, 15 min.
Discusses what a confined space is, and associated hazards. (VC0313)

Confined Space Case Histories, 1996, 14 min.
Re-enactments of real-life confined space accidents. Emphasizes the importance of following proper confined space safety procedures. Topics covered include safe atmospheric testing and monitoring, ventilation and personal protective equipment. (VC0284)

February 2002 — May 2002

Occupational Health & Safety Magazine publishes Workplace Fatalities to remind readers of the importance of workplace health and safety.

The information is not a final investigation report. In many cases investigations are continuing. Final investigation reports are filed at the Alberta Government Library – Labour Building Site and can be reviewed there or on the Workplace Health and Safety Web site at www.whs.gov.ab.ca under Fatalities.

An occupational fatality refers to the death of a worker caused by a work-related incident or exposure.

To protect personal privacy, the fatality descriptions do not include the names of the deceased.

Work-related incident fatalities

Most work-related incident fatalities that fall under provincial jurisdiction are investigated by Workplace Health and Safety. In general, highway traffic, farm, disease or heart attack fatalities are not investigated.

The following fatalities have been or are being investigated.

A 47-year-old technician employed by a wireless telecommunication network development company was driving an SUV with a metallic telescopic mast mounted to the front end of the vehicle. A parabolic antenna mounted to the top of the mast was connected via an insulated cable to a laptop computer inside the vehicle. The technician was driving with the antenna raised to 11.8 metres above ground when it contacted a 14,400-volt, single-phase overhead power line that crossed the road at a height of 8.7 metres. The technician stopped the vehicle and stepped out when the antenna was still in contact with the overhead power line. The simultaneous contact between the vehicle and ground completed a path for current flow, and the worker was electrocuted.

A 57-year-old plumber was carrying supplies into a new home that was under construction when he fell almost three metres through an opening into the basement. The man was taken to hospital, where he died nine days later.

A 26-year-old worker on a service rig was preparing to climb a ladder to the monkeyboard (platform on which a derrickman stands to guide pipe). He was putting on his fall-arrest harness as he crossed in front of the draw-works (equipment used to raise and lower pipe) to get to the ladder. As the worker swung the harness over his second shoulder, the dangling leg straps were accidentally flung over the draw-works' guardrail and got caught between the moving drill line and hoist drum. The worker was pulled over the guardrail by the moving equipment and was fatally injured.

A 41-year-old field production operator working at a dehydration facility was performing maintenance on a piece of sour gas compression equipment, when hydrogen sulfide was emitted from an undetermined source. The worker died from overexposure to the gas.

A 46-year-old sanitation worker, who worked at a bakery, was fatally injured when she became caught in a pinch point of a conveyor system. The worker had crawled under the conveyor and entered the inner drum area of a bread-cooling spiral conveyor. While attempting to clean around the conveyor, the worker's hands became caught between the rotating drum drive bars and the fixed conveyor support structure.

A 38-year-old labourer was operating an overhead crane equipped with lifting magnets, which was lifting approximately 9,000 kilograms of steel reinforcement bars. The load peeled away from the magnets and struck the labourer, who was operating the crane using a radio-operated remote control to guide the load. He was under the load when it fell.

Occupational disease fatalities accepted

Disease fatalities represent claims that have been accepted by the Workers' Compensation Board (WCB) – Alberta for compensation. They are counted in the year they are accepted.

A 29-year-old roofer, who died from complications to a traumatic brain injury sustained six years earlier.

A 51-year-old administrative assistant, who suffered a massive heart attack on a business trip.

A 61-year-old worker, who suffered a fatal heart attack resulting from complications related to medication he was taking for a permanent disability from a previous injury.

A 74-year-old heavy equipment worker, who died from heart disease and congestive heart failure resulting from complications related to permanent disabilities received in 1975.

A 58-year-old truck driver, whose surgery to correct an injury to his heel after a fall from a tanker truck ladder resulted in heart failure.

The following fatalities resulted from exposure to asbestos.

A 50-year-old welder's helper, who was exposed to asbestos in the 1980s while renovating railway bridges and buildings.

A 57-year-old retired glass blower, who was exposed over 34 years ago to asbestos used in the process of glass blowing.

A 77-year-old insulator, who was exposed to asbestos for the many years he worked in the insulation industry.

A 59-year-old electrician, who was exposed to asbestos in the 1970s.

An 81-year-old bus mechanic, who was exposed to asbestos in the 1980s.

ISSN 0705-6052 © 2002

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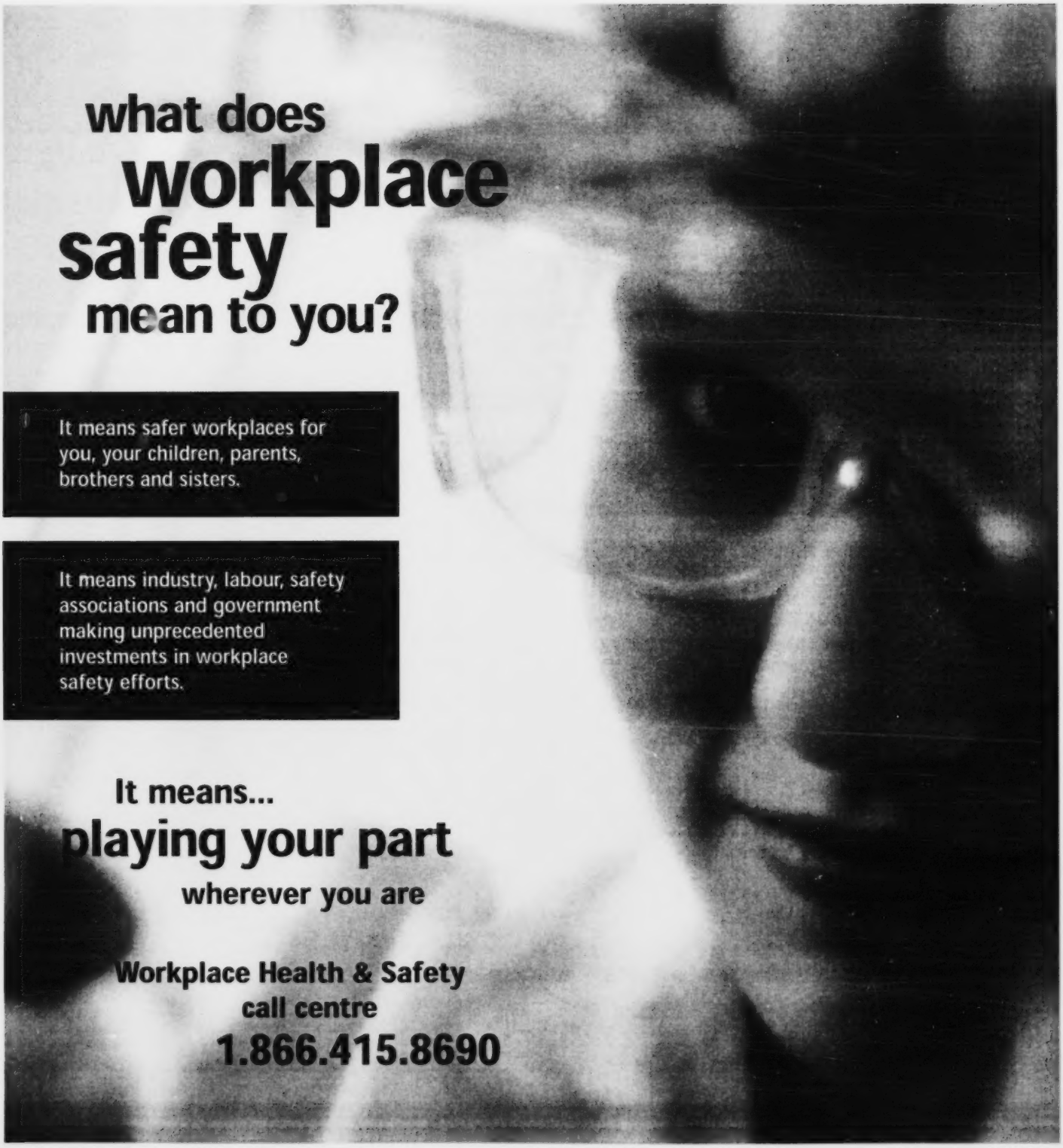
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